REMARKS

Claims 1-7 are pending in the application and claims 1-7 are rejected. Applicants have amended Claims1-7 in order to more particularly point out and claim their invention.

In the Specification

The disclosure was objected to because of informalities related to defining the first usage of abbreviations in the specification. Applicants have accordingly corrected the specification in order to identify these abbreviations.

The 35 U.S.C. § 112 Rejections

Claims 1-7 stand rejected under 35 U.S.C §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1-7 also stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. The Office Action states that the subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicants have amended Claim 1 in order to particularly point and distinctly claim a method for stabilizing spectral shift in a multi-layered dielectric reflectivity coating located on a substrate for reflecting electromagnetic radiation after formation of the dielectric reflectivity coating on the substrate. The method comprises exposing the multi-layered dielectric reflectivity coating to a pretreatment of a sufficient amount of deep ultraviolet (DUV) laser radiation that is less than or equal to 300 nanometers in wavelength to induce sufficient compaction or densification by removal of water vapor in enough of the multi-layered dielectric reflectivity coating to inhibit subsequent compaction or densification during continued exposure to DUV or shorter wavelength radiation. Applicants note that the less than or equal to 300 nanometer wavelength range is a generally accepted range for deep ultraviolet radiation (see, e.g., col. 2, lines 11-2 of U.S. Patent 6,410,209 to Adams et al.). For example, in applicants specification, an exemplary wavelength of 193 nm is described, e.g., at page 4, lines 5-26. This exemplary wavelength would fall within the generally accepted less than or equal to 300 nanometer range

for deep ultraviolet radiation as understood by Applicants and by others in the art. Accordingly, Applicants respectfully submit that Claim 1 is in condition for allowance, and request that the rejections under 35 U.S.C. §112 should be withdrawn.

Applicants have amended Claim 2, which depends from Claim 1, in order to particularly point and distinctly claim that the pretreatment laser radiation exposure amounts to energy of at least the equivalent of about 2 billion pulses of DUV radiation from a laser at 9 milliJoules per pulse. Applicants have also amended Claim 3, which depends from Claim 2, in order to particularly point out that that the pretreatment laser radiation exposure amounts to the energy being delivered at about a 3KHz pulse repetition rate. Claim 3 was also objected to for the informality of containing non-idiomatic English. Applicants submit that amended Claim 3 corrects these informalities. Accordingly, Applicants respectfully submit that amended Claims 2 and 3 are in condition for allowance, and that the rejections under 35 U.S.C. §112 be withdrawn.

Applicants have amended Claim 4, which depends from Claim 1, in order to particularly point out that the pretreatment laser radiation exposure amounts to energy of at least the equivalent of 15-18 milliJoules per pulse of laser radiation delivered over about 700 million pulses to 1 billion pulses. Applicants submit that amended Claim 4 is in condition for allowance, and request that the rejections under 35 U.S.C. §112 be withdrawn.

Applicants have also amended Claims 5, which depends from Claim 1, in order to more particularly point out that determining the amount of DUV laser radiation based upon a specified reduction in hygroscopicity of one or more layers of the multi-layered dielectric reflectivity coating, wherein a least one of the layers is hygroscopic. Similarly, Applicants have amended Claim 6 in order to more particularly point out that determining the amount of DUV laser radiation based upon a specified reduction in compaction of one or more layers of the multi-layered dielectric reflectivity coating. Applicants have also amended Claim 7 in order to particularly point out that determining the amount of DUV laser radiation based upon a specified reduction in hygroscopicity and compaction or more of the layers of the multi-layered dielectric reflectivity coating, wherein a least one of the layers is hygroscopic. Applicants submit that amended Claim 5-7 are in condition for allowance, and request that the rejections under 35 U.S.C. §112 be withdrawn.

The 35 U.S.C. 102(b) and 103(a) Rejections

Claim 1 stands rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 5,911,585 to Ruffner (hereinafter, the '585 reference). Claim 1 also stands rejected under 35 U.S.C. 102 (b) or 102(e) as anticipated by, or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 6,180,188 to Belleville et al. (hereinafter, the '188 reference) or U.S. Patent No. 6,387,517 to Belleville et al. (hereinafter, the '517 reference). Claims 1-2 further stand rejected under 35 U.S.C. 102(b) as being anticipated by, or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Publn. No. 2002/0001672 to Pan et al. (hereinafter, '672 reference).

Applicants claimed invention relates to a method for stabilizing spectral shift in a multi-layered dielectric reflectivity coating located on a substrate for reflecting electromagnetic radiation after formation of the dielectric reflectivity coating on the substrate. The method comprises exposing the multi-layered dielectric reflectivity coating to a pretreatment of a sufficient amount of deep ultraviolet (DUV) laser radiation that is less than or equal to 300 nanometers in wavelength to induce sufficient compaction or densification by removal of water vapor in enough of the multi-layered dielectric reflectivity coating to inhibit subsequent compaction or densification during continued exposure to DUV or shorter wavelength radiation.

The '585 reference relates to a thin film deposition method to make reflective mirrors for deep ultraviolet light applications. Applicants submit that the '585 reference merely indicates that laser radiation from an ArF laser at 193nm is used to "[c]haracterize the ultimate reflectance of optimized multi-layered mirror..." Col. 17, lines 14-17. Applicants contend that nothing in the '585 reference teaches, suggests, or provides motivation for Applicants' claimed method of *stabilizing spectral shift* in a multi-layered dielectric reflectivity coating by exposing the coating to a pretreatment of a sufficient amount of DUV laser radiation *to induce sufficient compaction or densification by removal of water vapor* in enough of the multi-layered dielectric reflectivity coating to *inhibit subsequent compaction or densification* during continued exposure to DUV or shorter wavelength radiation. The '585 reference only indicates that *lenses* made of particular materials used in DUV applications suffer from the problem of "absorption, which leads to optical compaction." See, e.g., col. 4, line 29 to col. 5, line 24. Applicants submit that the compaction described in the '585 reference is optical compaction, and is unrelated to compaction

in Applicants' claimed invention, where water vapor is removed from a dielectric coating to promote compaction or densification of the coating layers. The optical compaction described in the '585 reference relates to changes in the chemical composition of the material. Applicants submit that he '585 reference is silent on compaction or densification of multi-layered mirrors by removal of water vapor, or how one of skill in the art would stabilize spectral shift of a multi-layered dielectric reflectivity coating. Accordingly, Applicants submit that the '585 reference does not disclose, suggest, or provide motivation for Applicants' claimed method, and that Claim 1 is in condition for allowance.

The '188 reference relates to preparing optic material by depositing inorganic polymeric material on a substrate. The '188 reference also indicates that the deposited layers are exposed to ultraviolet radiation to under a UV lamp to achieve "cross-linking/densification by exposure to ultraviolet rays." See, e.g., col. 14, lines 57-65. Applicants submit that the cross-linking indicated in the '188 reference is entirely unrelated to Applicants' claimed invention. The cross-linking method of the '188 reference uses ultraviolet light to promote bonding formation between the polymeric materials. The reference indicates that the treatment "permits cross-linking of the polymetric network, for example of the metal or metalloid oxyhydroxide of each layer and thus to densify this layer" and the treatment "gives rise in particular to improved mechanical resistence and an increase in the refractive index compared with an equivalent layer which has not undergone such treatment." Col. 7, lines 25-30. This cross-linking process also "ensures good interaction between the layers and improves the mechanical abrasion-resistance of the coating." Col. 7, lines 59-64. Similarly, the '517 reference relates to preparation and deposition of polymeric material, and promoting cross-linking and densification between the layers. See, e.g., col. 7, lines 31-56. Applicants submit that the promotion of cross-linking of layers in the '181 or '517 references do not show, suggest, or provide motivation for Applicants' claimed invention of stabilizing spectral shift in a multi-layered reflectivity coating on a substrate after formation of the coating by inducing compaction or densification *by removal of water vapor* to inhibit subsequent compaction or densification. The compaction or densification in Applicants' invention is related to the removal of water vapor, and has nothing to do with promotion of cross-linking between inorganic polymeric layers formed on a substrate. Accordingly, Applicants submit that the '181 and '517 references are silent on compaction or densification of multi-

layered dielectric coatings by removal of water vapor, or how one of skill in the art would stabilize spectral shift of a multi-layered dielectric reflectivity coating.

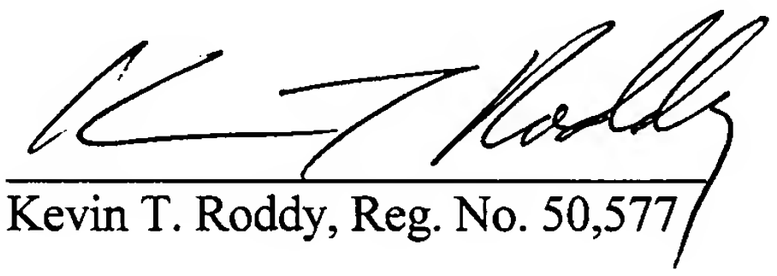
The '672 reference relates to an overcoat protected diffraction grating, and promoting durability of the grating for performance in intense ultraviolet radiation. Applicants submit that the '672 reference indicates that the coatings to the grating are chosen to protect the grating surface from ultraviolet cause degradation and improve normal reflectivity from the reflecting grating faces. See, e.g., paragraph [0045]. Applicants acknowledge the features of the '672 reference but submit that Applicants' claimed invention improves upon the '672 reference by providing method for *stabilizing spectral shift* in a multi-layered dielectric reflectivity coating located on a substrate for reflecting electromagnetic radiation after formation of the dielectric reflectivity coating on the substrate. Applicants' method exposes the multi-layered dielectric reflectivity coating to a pretreatment of deep ultraviolet laser radiation to induce compaction or densification by removal of water vapor in enough of the multi-layered dielectric reflectivity coating to inhibit subsequent compaction or densification during continued exposure to DUV or shorter wavelength radiation.

For at least the above reasons, Applicants believe that Claim 1 is not shown or suggested by the prior art of record, and submit that Claim 1 is in condition for allowance. Applicants further submit that claims 2-7, which depend from claim 1, are also in condition for allowance for at least the same reasons as indicated above.

Claims 6 and 7 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the '188 or '517 patents. Applicants respectfully submit that Claims 6 and 7 are allowable for at least the same reasons that Claim 1 is allowable. Applicants respectfully request that the rejections under 5 U.S.C. 103(a) be accordingly withdrawn.

Applicants do not believe any fees are due at this time. However, if any other fees are due, the Commissioner is authorized to charge the appropriate amount to Deposit Account No. 03-4060.

Respectfully submitted,



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